What is claimed is:

1. Rotary crop residue accelerating apparatus for a vertical side discharge crop residue spreader for an agricultural combine, comprising:

a rotatable member mountable in an upwardly and forwardly open housing of the spreader for rotation therein in a predetermined rotational direction about a generally forwardly and rearwardly extending rotational axis through a center of the rotatable member; and

a plurality of blades connected to and supported by the rotatable member at angularly spaced locations around the rotational axis, respectively, for rotation with the rotatable member within the housing adjacent to a forwardly and upwardly facing opening thereof through which a downwardly directed first flow of crop residue is to be received, each of the blades having a surface oriented to face in the rotational direction for propelling and accelerating the crop material flow through and from the housing, and each of the blades including a forward surface portion disposed to rotate adjacent to a forwardly facing portion of the opening through which a second flow of crop material is to be received, the first surface portion including a radial outer tip portion that extends radially outwardly and forwardly from the blade and has a shape and orientation which during the rotation will generate a negative pressure condition in a region forwardly of the forwardly facing opening of the housing for inducting the second flow into the housing therethrough.

2. Rotary crop residue accelerating apparatus of claim 1, wherein the radial outer tip portion of each of the blades is curved or bent so as to extend forwardly in the rotational direction and

terminates at an edge portion spaced in the rotational direction from the surface of the blade.

3. Rotary crop residue accelerating apparatus of claim 1, wherein the radial outer tip portion of each of the blades includes a radially inner edge portion which tapers forwardly and radially outwardly to a forwardmost edge portion of the outer tip portion.

4. Rotary crop residue accelerating apparatus of claim 1, wherein the radial outer tip portion of each of the blades is curved or bent so as to extend forwardly in the rotational direction and terminates at an edge portion spaced in the rotational direction from the surface of the blade and oriented at an acute angle relative to the rotational direction greater than zero and less than about 40 degrees.

5. Rotary crop residue accelerating apparatus of claim 4, wherein the edge portion is oriented at from about a 30 to 40 degree angle relative to the rotational direction.

6. Rotary crop residue accelerating apparatus for a crop residue spreader of an agricultural combine, the spreader including a forwardly and upwardly open enclosure for receiving a downward flow of straw from threshing apparatus of the combine and a lower, rearward flow of lighter chaff and air from a cleaning system of the combine, the crop residue accelerating apparatus comprising:

a hub mountable on a rotatable member of the spreader for rotation therewith in a predetermined

rotational direction about a generally forwardly and rearwardly extending rotational axis;

a plurality of blades connected to and supported by the hub at angularly spaced locations around the axis, respectively, for rotation with the hub, each of the blades having a surface oriented to face in the rotational direction including a forward surface portion, a rearward surface portion, and a mounting portion therebetween, the forward surface portion terminating at a forward axial edge that extends radially outwardly and forwardly from about the hub to a forwardly extending radial outer tip portion, the radial outer tip portion having a curve or angled shape so as to extend forwardly and toward the rotational direction and terminating at an edge portion spaced in the rotational direction from the surface of the blade, for generating a negative pressure condition in a region located immediately forwardly of the blade when rotated in the rotational direction for inducting the rearward flow of chaff and air into a path of rotation of the blades so as to mix with the flow of straw and be accelerated by the rotating blades through and radially outwardly from the spreader.

7. Rotary crop residue accelerating apparatus of claim 6, wherein the radial outer tip portion of each of the blades includes a radially inner edge portion which tapers forwardly and radially outwardly to a forwardmost edge portion of the outer tip portion.

8. Rotary crop residue accelerating apparatus of claim 6, wherein the radial outer tip portion adjacent to the edge portion thereof is oriented

at an acute angle relative to the rotational direction greater than zero and less than about 40 degrees.

9. Rotary crop residue accelerating apparatus of claim 8, wherein the radial outer tip portion adjacent to the edge portion is oriented at from about a 30 to 40 degree angle relative to the rotational direction.

10. A vertical crop residue spreader for an agricultural combine, comprising:

a housing having a forwardly and upwardly facing opening for receiving a downward flow of straw from threshing apparatus of the combine and a lower, rearward flow of lighter chaff and air from a cleaning system of the combine;

at least one crop residue accelerating apparatus supported for rotation within the housing, the crop residue accelerating apparatus including a central hub drivingly rotatable in a predetermined rotational direction about a rotational axis therethrough oriented generally horizontally or at a small acute angle to horizontal;

a plurality of blades connected to and supported by the hub at angularly spaced locations around the axis, respectively, for rotation with the hub, each of the blades having a surface oriented to face in the rotational direction including a forward surface portion, a rearward surface portion, and a mounting portion therebetween, the forward surface portion terminating at a forward axial edge that extends radially outwardly and forwardly from about the hub to a forwardly extending radial outer tip portion, the radial outer tip portion being curved or angled so as to extend forwardly and toward the rotational direction and

terminating at an edge portion spaced in the rotational direction from the surface of the blade, for generating a negative pressure condition in a region located immediately forwardly of the blade when rotated in the rotational direction for inducting the rearward flow of chaff and air into a path of rotation of the blades so as to mix with the flow of straw and be accelerated by the rotating blades through and radially outwardly from the spreader.

11. The spreader of claim 10, wherein the radial outer tip portion of each of the blades of the crop residue accelerating apparatus includes a radially inner edge portion which tapers forwardly and radially outwardly to a forwardmost edge portion of the outer tip portion.

12. The spreader of claim 10, wherein the radial outer tip portion adjacent to the edge portion of each of the blades is oriented at an acute angle relative to the rotational direction greater than zero and less than about 40 degrees.

13. The spreader of claim 12, wherein the radial outer tip portion adjacent to the edge portion is oriented at from about a 30 to 40 degree angle relative to the rotational direction.